The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

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STATEMENT OF JEFFREY HARDESTY
U.S. DIRECTOR, GLOBAL FIRE INITIATIVE
THE NATURE CONSERVANCY
BEFORE THE
COMMITTEE ON AGRICULTURE
UNITED STATES HOUSE OF REPRESENTATIVES

Oversight Hearing on the President's Healthy Forest Initiative
April 30, 2003

I. INTRODUCTION

Mr. Chairman and members of the Committee, thank you for the opportunity to provide written testimony for the Committee's oversight hearing on forest health. The Nature Conservancy has a long-standing interest in abating the threats to biodiversity stemming from altered fire regimes, and I am pleased to present the Conservancy's views on this important topic. I am the U.S. Director of the Conservancy's Global Fire Initiative. I have worked in a variety of capacities for the Conservancy for 11 years, focusing on collaborating with a wide diversity of partners to integrate biodiversity conservation with community values.

In my family, fire has both personal and professional connotations. My great-great grandfather and great uncle died while fighting the big Idaho fires in 1910 that Gifford Pinchot used as leverage to create the National Forest Service. My father fought fires in Oregon and Idaho for the CCCs during the Great Depression. Ironically, it would seem, I've spent the past decade and more working with partners to reintroduce the natural role of fire to grasslands and forests across the U.S.

The Nature Conservancy is dedicated to preserving the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. The Conservancy has more than 1.1 million individual members and over 1,900 corporate sponsors. We currently have programs in all 50 states and in 30 other nations. To date our organization has protected more than 14 million acres in the 50 states and Canada, and has helped local partner organizations preserve over 102 million acres in other nations. The Conservancy itself owns more than 1,340 preserves in the United States – the largest private system of nature sanctuaries in the world. Our conservation work is grounded in sound science, strong partnerships with other landowners, and tangible results at local places.

II. SUMMARY OF MAJOR POINTS

For thousands of years, fire has played a vital role in shaping North American ecosystems. Nearly all terrestrial and many wetland systems experience fire at some interval, and many include plants and animals adapted to or dependent on fire. When key attributes of a fire-adapted ecosystem are altered — for example, by forest management that creates large even-aged patches of forest or by fire suppression that increases the density of fire-intolerant trees and fuels — otherwise natural fires may burn with uncharacteristic behavior, resulting in long-term damage to communities and ecosystems.

In the U.S., altered fire regimes are the result of more than 100 years of fire exclusion, often coupled with incompatible forestry and grazing practices. The Nature Conservancy has identified more than 107 million acres of critical lands where biodiversity values are at serious risk of degradation from altered fire regimes. The problem is particularly acute in short interval, low intensity fire regimes. The trend in such areas is toward fires of increasing intensity and severity that threaten ecosystem health as well as life and property, especially in the ever-burgeoning wildland-urban interface. Nevertheless, millions of acres of ecosystems are still in good condition, and the management goal on those lands ought to be to maintain ecological processes such as fire.

It is critical that we address the problem of altered fire regimes by shifting our focus from fire suppression to management of fire-adapted ecosystems. But we will not fix the problem overnight—years of active restoration, monitoring, research, adaptive management, and citizen involvement will be required to protect human communities and restore the ecological health of our forests and grasslands. While we need to address the ecosystem health problem aggressively, we must be prudent in our actions, and commit to learning from both our successes and our missteps so we will not repeat the mistakes of the past.

Over the past 40 years The Nature Conservancy has successfully restored and maintained natural fire regimes on thousands of acres of our own lands and has worked cooperatively with state and federal agencies and private landowners to manage fire-adapted ecosystems on hundreds of thousands of additional acres. In doing this we have developed a conservation framework that relies on adaptive management, including setting measurable ecological goals, monitoring to ensure those goals are met and working at a landscape scale.

Based on this on-the-ground experience, we believe that:

1) Legislation is appropriate to prioritize and facilitate reduction of hazardous fuels within tightly defined wildland-urban interface (WUI) areas and water supply areas with the dual objectives of addressing immediate concerns for public safety and, through the process of adaptive management, of learning the most effective and ecologically sound methods of reducing fuel loads.
2) A few large fuel reduction demonstration projects are also appropriate outside the WUI. These areas should be selected based on the need for ecological restoration and their value in demonstrating how agencies, communities and scientists can work cooperatively in planning

and implementing fuel reduction on a landscape scale. Expedited approval processes are not necessary or appropriate in those areas.

3) Lessons should be drawn from these activities that will inform and guide future efforts to reduce fuels and restore natural fire regimes.

4) Congress and the agencies should devote significantly more resources to appropriate treatment and restoration of altered fire regimes. The more funds are diverted for suppression, the higher the long-term cost, ecologically and financially. While at some locations fuel reduction may result in products that offset a portion of the cost of biomass removal, priorities should be driven by public safety within the WUI, and ecological risk in the demonstration projects. In the near term, human and ecological risk reduction cannot be achieved without adequate appropriations.

5) In the longer run, the need to remove millions of tons of small diameter trees that currently have little economic value will be a major barrier to restoration of larger landscapes. Where thinning is ecologically, scientifically and socially acceptable, in concept we support offsetting the costs of services with the marketable by-products of restoration, especially where these activities support small businesses and local job creation. To accomplish this some form of subsidy for the creation of facilities to use biomass from fuel reduction may be appropriate. Such subsidies should be tied to high priority areas for fuels treatment within the wildland-urban interface or to the sites of large scale demonstration projects.

After opportunities for careful review, we would be happy to share with the Committee specific comments on proposed legislation.

III. THE NATURE CONSERVANCY AND RESTORING FIRE-ADAPTED ECOSYSTEMS

The Nature Conservancy has long recognized the critical ecological role of fire in ecosystems in the U.S. and around the world. Over the past 40 years, Conservancy staff have pioneered the use of prescribed fire as an ecological management tool throughout the Conservancy's preserve system, and have helped develop similar programs with many public and private partners. We have an active fire program with professional staff, which adheres to strict standards and planning requirements and has the capacity to safely perform prescribed burns on an average of 70,000 acres per year, and to support the planning and implementation of burns on another several hundred thousand acres per year, in conjunction with our partners. We have approximately 100 prescribed fire "burn boss" qualified staff and approximately 400 staff trained to participate in prescribed fire activities. Through the years, the Conservancy has gained invaluable experience in the practical, technical, scientific and social aspects of fire use, built a cadre of in-house fire experts, and garnered the respect of other public and private sector fire experts.

Under the auspices of the National Fire Plan, The Nature Conservancy is working with partners to restore ecosystems and reduce hazards to communities. In 2002, the Conservancy entered into a cooperative agreement with the USDA Forest Service and Interior agencies (BLM, USFWS, NPS and BIA) that provided a vehicle for working collaboratively under the umbrella of the National Fire Plan. This cooperative agreement funds Conservancy professionals and other partners to assist the agencies and stakeholders in landscape-scale fire planning, technical training and capacity building, public education, community-based stewardship, and scientific research. This past January, The Nature Conservancy received an award from the Secretaries of Agriculture and the Interior for Excellence in Implementing the National Fire Plan.

To date, one of our most successful collaborative endeavors has been an innovative, nationwide Fire Learning Network, consisting of 25 landscape-scale projects that include more than 200 partners and approximately 45 million acres of high priority conservation areas, plus support of another 25 projects totaling an additional 20 million acres. In each of these projects, all stakeholders – from community groups to federal agencies – come together to develop a shared vision of the desired future condition of their landscape, and learn how to overcome critical challenges related to the health of fire-adapted ecosystems. The Nature Conservancy provides expertise in ecology and fire management, and facilitates a truly collaborative process among interested landowners. The results to date have included community-based fire management plans for large landscapes and several projects have begun treatment at large scales. One of the most important goals of the Fire Learning Network is to demonstrate that it is possible to restore ecosystems while also reducing wildfire hazards to people.

The Nature Conservancy also co-chaired the Stakeholder Advisory Committee of the federal agencies' Joint Fire Sciences Program that in 2002 allocated $16 million in funding to critical research, and plays a key staff role at the national Interagency Prescribed Fire Training Center. We hope that these partnerships with the Forest Service and the Interior agencies have helped to advance the appropriate management of fire-adapted ecosystems.

IV. REDUCING THE THREAT OF UNNATURAL FIRES – FUNDAMENTAL PRINCIPLES

A. <u>The problem of altered fire regimes</u>.

For thousands of years, fire has played a vital role in shaping North American ecosystems. Nearly all terrestrial and many wetland systems experience fire at some interval. Many ecosystems include plants and animals adapted to or dependent on fire ("fire-adapted ecosystems"). Fire-adapted ecosystems are resilient to fires occurring within an historical range of variation. Changes in fire regimes lead to changes in ecosystem structure, composition and function. Fire regimes are quantified in terms of their fuel types, fire frequency, intensity, seasonality, and severity of impacts on characteristic vegetation. Fire-adapted ecosystems include a wide spectrum of characteristic fire regimes, ranging from high frequency, low severity ground fires that occur every 2 to 5 years in southeastern longleaf pine forests, to infrequent, large scale, and high intensity "stand-replacing" crown fires that occur naturally every 75 to 200 years in lodgepole pine forests in the Intermountain West.

Ecosystems with very different fire regimes often co-exist in the same landscape. For example, Florida sand pine scrub burns with stand-replacing fires every 20 to 50 years, but is embedded in longleaf pine forests that experience ground fires every 2 to 5 years. And in many landscapes, the same fire event will have very different effects on different ecosystems. For example, some old growth, mixed conifer coastal rainforest ecosystems in the Pacific Northwest experience large fires only every 100 to 200 years, and only during severe drought. A single landscape-scale fire in these systems will behave very differently depending on overall landscape character, including presence of natural fire breaks, slope, exposure, altitude, and current vegetation structure and composition; the net effect is a mosaic of varied ecosystem types and stand ages that are a key component of these biologically and topographically diverse landscapes.

When key attributes of a fire-adapted ecosystem are altered, otherwise natural fires may burn with uncharacteristic behavior, resulting in long-term damage to communities and ecosystems. In the U.S., altered fire regimes are the result of more than 100 years of fire exclusion, often coupled with incompatible forestry and grazing practices. Where fire has been excluded or fire behavior changed by management, thousands of species have been put at risk. The Nature Conservancy has identified more than 107 million acres of critical lands where biodiversity values are at serious risk of degradation from altered fire regimes—a conservative estimate. More than 1,900 areas of conservation interest to the Conservancy and several entire ecoregions consist almost entirely of ecosystems with altered fire regimes.

Ecosystems with a history of relatively frequent and low to moderate intensity fires are especially vulnerable to uncharacteristic fire effects. The trend on many of these lands is toward fires of increasing intensity and severity. When people, subdivisions and fire-adapted ecosystems collide in the wildland-urban interface, the consequences can be catastrophic in terms of damage to life and property. Unfortunately, the result has been an increasingly costly and futile effort to suppress fires, in turn leading to escalating fire intensity and increasing the risks to life, property and the health of ecosystems.

Invasions by non-native fire-adapted plants have also significantly altered the role of fire in many ecosystems. Invasion is increasingly associated with fires occurring outside the historical range of variation. For example, non-native cheat grass has dramatically altered Great Basin sagebrush ecosystems, creating a devastating positive feedback loop (invasion-increased fire frequency-increased invasion) that has eliminated sagebrush communities across millions of acres, putting at risk many once common species such as sage grouse.

B. Fundamental Principles.

We are here today because we are facing the effects of decades of missteps regarding treatment of our public forests. The scale of the problem posed by altered fire regimes is vast, and we need to devote substantial government resources to fixing it. But we will not fix the problem overnight—years of active restoration, monitoring, research, adaptive management, and citizen involvement will be required to protect human communities and restore the ecological health of fire-adapted forests, shrublands and grasslands.

The forest health problem is also complex and we must approach it thoughtfully. While there exists some urgency in addressing the problem, we need to be prudent and deliberate. **If we do not treat fire-adapted ecosystems using an adaptive management approach – i.e., by committing to learning from both our successes and our mistakes – we will repeat the mistakes of the past. We cannot afford to do this.** It is imperative that management decisions recognize the differences among ecosystems and fire regimes, while incorporating ecosystem dynamics, uncertainty, historical management, current conditions, and desired future conditions. Notwithstanding the efforts of the past few years, we still have insufficient data on what sorts of treatments help to reduce fire risk while also restoring ecosystem health. No one type of management will be appropriate everywhere, and not all areas should be treated until we know the most effective ways to treat them. For this reason, management must be coupled with monitoring designed to evaluate the results and provide guidance for future management actions. While location-specific adjustments are essential, the following general principles are widely applicable.

1. **Large-scale suppression is a losing and very costly proposition. Over time, markedly shifting the management emphasis toward prescribed fire and wildland fire use will be the cheapest and most ecologically sustainable option in many ecosystems.**

While fire suppression will continue to play an important and vital role in protecting people and sometimes ecosystems from wildfires, we advocate a much greater investment in "fire use," including both prescribed fire and "managed wildland fire" (that is, managing wildfires in wildlands to meet stated objectives where the threat to people is low). If applied appropriately and at scale, proactive fire use will save hundreds of millions of dollars over time while allowing fire to act as a beneficial natural process and reducing overall risks to firefighters and communities. As was dramatically illustrated during the 2002 fires in the West, several areas that had been previously treated with prescribed fire suffered little ecological damage, and a number of otherwise threatened subdivisions were protected. Similarly, during the disastrous 1998 wildfire season in Florida, the Ocala National Forest and several state parks, which have an extensive prescribed fire program, suffered far less damage than surrounding private lands.

Even where fire is used proactively, most prescribed fire and wildland fire use plans lack clearly stated ecological or fuels reduction objectives. Measures tend to focus on "acres blackened" not on desired ecological or hazardous fuel outcomes. Managed wildland fire and prescribed fire are underused for a variety of reasons, including the fact that fire suppression is first in line when resources are allocated; agencies are behind in developing wildland fire and prescribed fire plans; and managers lack appropriate incentives and rewards. In fact, perverse counter incentives exist owing to the real or perceived career risks associated with proactive fire use.

2. **Restoration of fire-adapted ecosystems must be driven by ecological objectives and desired future conditions.**

As Chief Bosworth has stated, management must focus on what we leave on the land, not what we take away. Restoration objectives must be scientifically defensible and adaptive or we risk repeating the mistakes of the past. The history of forest and fire management in the U.S. demonstrates that management prescriptions aimed at preventing fires in the short-term may cause more long-term harm than good, by degrading ecosystems or exacerbating risks to people. In some ecosystems, logging and forest thinning may actually increase fire hazards by creating even-aged single-species stands of fire-intolerant younger trees, making forests more susceptible to windthrow, or increasing fuel flammability by allowing more sunlight on the forest floor, while in others, thinning will be an invaluable adjunct to prescribed fire.

3. **Projects should be designed to facilitate learning and provide accountability via adaptive management, including developing measurable ecological objectives and conducting appropriate monitoring.**

Management of altered fire regimes calls for humility and prudence, while the threat of altered fire regimes calls for immediate action. Yet, the long history of forest management in the United States and around the world clearly demonstrates that despite our best intentions we will inevitably make mistakes. Judging whether hazard reduction and ecosystem restoration goals have been met, and learning from missteps, requires that management be coupled with monitoring in a landscape-scale adaptive management framework. For many of the reasons described above, adaptive management is the smartest way to achieve desired end results. But few projects include even the most basic components of adaptive management, such as setting measurable ecological objectives or following through with simple monitoring. At present, agencies devote so little funding or other resources to monitoring, that it is difficult to determine whether projects are leading to either significant reduction of fire hazards or improved ecological health.

What do we mean by adaptive management as applied to restoration of fire-adapted ecosystems? The Nature Conservancy has developed a conservation approach over the past two decades that we use in landscape-scale restoration of fire-adapted ecosystems. The approach can be applied at any scale, and in virtually any social setting or set of resource limitations. We believe this approach meets the standards necessary to ensure the best restoration and conservation practices possible. Among others, key features include developing measurable objectives at landscape and project scales; using "management experiments" and monitoring to learn and progressively refine alternative prescriptions and treatments; and instituting a concrete process for measuring progress and adapting action.

This approach to adaptive management does not need to impose undue burdens on the agencies, and in fact will save money in the long run. In our experience, adaptive management is not inconsistent with cost-effective restoration. First, a well-designed monitoring program can be strategically focused on a few resources or triggering events, and need not be overly burdensome. Second, data gathered through monitoring in one project is often exportable, resulting in simplified monitoring requirements for projects in similar ecosystems. Third, doing restoration right – with early community buy-in, and management adjustments based on credible data – will ensure the best chance of real restoration, which means lower management costs in the future, as well as reduced risks of unnatural fire and accompanying high costs of fire suppression.

At a minimum, we believe that agencies should adopt as standard practice in all projects the following:

- Develop objectives that are ecosystem-specific, measurable, and define restoration and fuel reduction end results.
- Monitor and assess progress toward desired future condition at both landscape and project scales.

4. **Fire is a landscape-scale process.**

Treatment methods must recognize that fires occur across entire landscapes and ecosystems, and effective fire management planning must occur at the landscape level. The size of an area that represents a "landscape" will differ depending on the ecosystem but is often on the order of hundreds of thousands of acres. Even within large landscapes, there will be variations in type of treatment depending on the ecosystem type, and in many areas, it will be appropriate to do no treatment at all.

The ongoing BLM and Forest Service Plan revision processes provide an excellent opportunity to ensure that landscape-level fire planning is undertaken and is integrated with other factors in the planning process. Directions to design projects based on landscape-scale analysis should also be part of the agencies' current fire planning efforts.

5. **Because altered fire regimes and hazards vary widely among ecosystems, so should objectives and treatments--in other words, one size management will not fit all ecosystems.**

In some ecosystem types, such as lodgepole pine forests that cover millions of acres in the West, infrequent but high intensity, large-scale fires are natural events (e.g., 1988 fires in the lodgepole pine forests of the Greater Yellowstone Ecosystem). In these ecosystem types, communities would be wise to adapt building codes and encourage rational development patterns that reflect risks and minimize the threat to public safety, as well as take aggressive action in the urban-wildland interface. In other ecosystems, such as ponderosa pine forests with naturally short fire return intervals, unnaturally intense fires are the result of past fire exclusion coupled with ecologically unsound logging and grazing practices, threatening both ecosystem integrity and human health and safety. In these systems, mimicking a known historical ecosystem structure via thinning and a natural fire regime with prescribed fire will likely reverse ecosystem degradation, while also reducing risks to people where altered fire regimes are adjacent to urbanized areas.

Many restoration and hazard reduction tools are available, but each has different benefits, costs and risks. In many places, prescribed fire and "managed wildland fires" are clearly the tools of choice, though they are greatly underused relative to their benefits and costs. In any case, wildfires will continue to burn despite suppression efforts and many will produce desirable ecological outcomes where ecosystem structure and function occur within the range of historical variation. Many other places will require more costly management, including some combination of thinning of non-merchantable small diameter trees, re-vegetation with native species, control of non-native invasive species, and creation of fuel breaks to protect human infrastructure. As with any prescription, where and when to use thinning as has to be informed by the best available scientific understanding of ecosystem dynamics. Unless these treatments also are coupled with prescribed fire or exposure to natural wildfire consistent with historical frequency and intensity, costly restoration and hazard reduction gains will quickly be lost.

6. **Complete and adequate restoration and rehabilitation cannot be accomplished without use of native plant materials.**

Restoration of fire-adapted ecosystems will require a focus on more than just reduction of fuel loads through prescribed fire and mechanical treatments. An equal focus on restoring native plant communities is essential to the long-term success of these projects including the use of native seed and seedlings during fire rehabilitation, fuels reduction and ecosystem restoration projects, and following other invasive species treatments. In order to ensure that sufficient native plant materials from appropriate geographic locations, elevations and climatic zones are available at reasonable cost, continued support for the interagency Native Plant Materials program through National Fire Plan funding is essential. This partnership includes Federal and State agencies, non-profit botanic gardens, and commercial seed growers and nurseries working together to significantly increase the native seed supply.

7. **Engaging local communities in collaborative planning, implementation and measuring results will yield better, speedier and more sustainable decisions and results over the long-term. Sometimes you have to go slower to go faster.**

A number of collaborative, voluntary and inclusive community-planning approaches have been developed and tested over the past decade. Many of these efforts are landscape-scale in scope, and encompass multiple public and private ownerships and projects under one umbrella plan. Although there are no guarantees, it has been our experience that bringing stakeholders together to voluntarily plan across ownerships often results in projects that are implemented with maximum buy-in and a minimum of costly and time-consuming delays and third-party challenges. Under a community-based adaptive management framework, planning can include NEPA public involvement and appeal processes. When disputes arise, individual projects or problem areas can be pulled out of larger plans for dispute resolution and more detailed planning. Consideration of alternatives is also a tool for dispute resolution as well as analysis.

Ecosystems, wildfires and fire hazards cross political and legal boundaries. Yet currently, federal land managers do not always take full advantage of authorities (e.g., the Wyden Amendment) that allow them to collaboratively plan, work on or support cross-boundary projects with state agencies and willing neighboring private landowners. We will not be successful at either ecosystem restoration or reducing hazards to people if we continue to think, plan and act at small scales or only within the boundaries of individual public or private ownerships.

8. **Success over the long-term demands that today's investments in ecological restoration and hazard reduction be maintained through sustained commitments of funding and management action over the long-term.**

As noted above, Congress and the agencies must devote more resources to appropriate treatment and restoration of altered fire regimes. The more funds are diverted for suppression, the higher the long-term cost, ecologically and financially. In 2000, federal suppression costs exceeded $1.3 billion. At the time this was viewed as an anomaly, yet it was surpassed in 2002.

In large fire years, fire-fighting requires that federal agencies shift funds internally from other programs to pay suppression costs. In the short-term, this means that already approved and funded high priority restoration and hazard reduction projects are not completed, are delayed, or in some cases are canceled for lack of funding, further exacerbating both near- and long-term problems. Congress usually appropriates emergency funds to replenish suppression costs, but not always the full amount of funds expended. This approach will continue to be a major barrier to restoration until Congress creates a vehicle to protect restoration funds from extraordinary fire suppression costs. It is critical that Congress fund, and the agencies use, adequate investments for comprehensive large scale treatment of the altered fire regime/excessive fuel load problem on forested public lands.

V. REDUCING THE THREAT OF UNNATURAL FIRES – A POLICY APPROACH

As discussed earlier, the problem of altered fire regimes has two components. First, fire suppression and increasing fuel loads have caused risk to human communities and public welfare. Second, the same causes pose severe threats to ecosystems. As much of the recent proposed legislation recognizes, these two areas -- places where communities are threatened, and landscapes extending beyond those places -- should be addressed in separate but related ways. In our view, legislation should prioritize hazardous fuels reduction projects where there is a risk to human communities, and should also recognize the need to begin the methodical treatment of areas, at a landscape scale, where the principle threat is to biodiversity. If adaptive management (including ecological objectives and monitoring) is applied to all of these projects, we will gain valuable knowledge that will result in more cost-efficient and effective restoration of altered fire regimes, leading to greater protection of human lives and property as well as biodiversity.

Treatments where communities are threatened. Because of the need to do hazardous fuels reduction to protect property and life, it is important to prioritize projects in the wildland-urban interface (WUI) and areas where municipal water supplies are threatened. If these fuels reduction projects are undertaken with the adaptive management principles described above, we can learn important lessons about how to manage larger ecosystems. For example, a particular project in the WUI, based on collaborative process and monitoring, will inform how fuels reduction and ecological restoration should be done in the larger ecosystem that contains that WUI area. Using the WUI projects to try different treatment methods, gather important data and obtain community support will likely reduce the need for lengthy analysis and monitoring of projects in similar ecosystems, and will also reduce the risk of later mistakes in those ecosystems.

Because of the need for expedited actions to ensure fuel reduction, some simplifying of NEPA procedures is appropriate in narrowly-defined wildland-urban interface areas where communities are directly threatened.

Treatments where larger ecosystems are threatened. In some areas, landscape scale treatments will be necessary beyond the wildland-urban interface. We recommend that the Forest Service and BLM focus strategically on a few landscape scale areas that are critically in need of hazardous fuels reduction for protection of communities and biodiversity. These areas should be selected based on their need for restoration through treatment, on the level of risk posed by existing conditions, and on the prospects for successful collaboration with surrounding communities and other stakeholders. As with treatments in the WUI, adaptive management should be a guiding framework, and lessons learned from these projects can be exported to similar ecosystems in need of treatment.

NEPA procedures should apply to the planning of such projects, but careful and collaborative goal setting, community involvement, and adaptive management should be used to demonstrate if and how such projects can move forward in a timely way within the framework of those procedures.

Adequate funding is essential for the success of this approach. Fuels treatment particularly within the WUI, requires adequate Federal appropriations. All evidence suggests that such expenditures are less than the cost of fire suppression and the damage caused by cataclysmic wildfires. While utilization of the products of fuel reduction may be able to offset some of the cost, priority setting should be driven by risk assessment not by the value of wood that might result from thinning.

Biomass utilization can reduce public expenditures if it becomes part of fuel reduction planning. The need to remove from forests and grasslands millions of tons of small diameter trees that currently have little economic value is a major barrier to restoration in many places. The biggest challenges are lack of markets and the current low value of small trees. Where thinning is ecologically, scientifically and socially acceptable, in concept we support offsetting the costs of services with the marketable by-products of restoration, especially where these activities support small businesses and local job creation. Programs to subsidize facilities to utilize biomass should be implemented in conjunction with landscape scale fuel reduction in areas where threat assessment suggests that such projects are appropriate. Secondly, treatments themselves should be based on scientifically credible ecosystem restoration and hazard reduction goals and not simply the desire to support local jobs. With these caveats The Nature Conservancy supports active federal and state investment in research and small grant programs aimed at creating technologies and catalyzing the efforts of local entrepreneurs.

We believe that the approach described above would provide immediate reduction in human risks while developing the foundation in knowledge, experience and process for addressing the large scale threats of altered fire regimes.

VI. CONCLUSION

Thank you again for the opportunity to testify on behalf of The Nature Conservancy. We would be happy to provide the Committee with further information or to work with the committee on legislative solutions that would meet the critical goal of restoring fire-adapted ecosystems to protect human lives and property as well as to preserve the diversity of life on Earth.

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The Nature Conservancy

Expenditures of Federal Awards
For the years ended June 30, 2001 and June 30, 2002

Federal Agency and Pass-Through Entity	Federal Agency CFDA Number	Total Federal Expenditures 2001	Total Federal Expenditures 2002
Environmental Protection Agency	66	1,082,757	1,438,986
Federal Emergency Management Agency	83	32,414	992
National Aeronautics and Space Administration	43	1,007	
National Fish and Wildlife Foundation		2,907,604	
National Foundation of Arts & Humanities	45		4,457
National Science Foundation	47	12,007	20,000
Tennessee Valley Authority	62	51,324	47,252
US Agency for International Development	02	10,146,282	10,574,980
US Department of Agriculture	10	1,034,810	3,516,448
US Department of Commerce	11	4,769,041	2,403,540
US Department of Defense	12	3,648,597	9,810,384
US Department of Energy	81	158,950	344,110
US Department of State	19	33,351	8,659
US Department of Interior	15	10,321,876	14,474,644
US Department of Transportation	20	3,934,759	261,940
Grand Total		**38,134,815**	**42,906,392**

Abbreviated Curriculum Vitae

JEFFREY L. HARDESTY
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CURRENT POSITION

- **Director, Global Fire Initiative-U.S. Program, The Nature Conservancy, 2002-present**

Other Positions with The Nature Conservancy:
Director, Ecological Management and Restoration, Conservation Science Division, 1999-2002
Director, Public Lands Conservation Program, The Nature Conservancy of Florida, 1992-1999

RELEVANT CAREER ACCOMPLISHMENTS

- **Catalyzed creation of Global Fire Initiative in 2002, one of five organization-wide Nature Conservancy conservation initiatives and priorities, and currently serve as Acting Director.** Negotiated key interagency agreement among TNC, USFS, BLM, USFWS, NPS and BIA, including cooperative fire training and education program and sponsorship of 40 large-scale, community-based fire restoration projects encompassing more than 60 million acres and more than 200 partners; established collaborative fire management networks in the U.S., Central America, the Caribbean and Mexico with numerous government and NGO partners; negotiated global partnership with World Wildlife Fund and IUCN.
- **Served on The Nature Conservancy's Change Team, an 8-month appointment that resulted in a major reorganization of The Nature Conservancy's structure and programs during 2001-2002.**
- **Pioneered use of collaborative learning networks as a way of accelerating the pace and increasing the scale of The Nature Conservancy's on-the-ground restoration and management projects and partnerships beginning in 1999.** Over the past 3+ years, learning networks have brought together practitioners from more than 185 large-scale projects, community-based conservation projects, representing forest management, wetlands restoration, fire-adapted ecosystem restoration, and aridlands grazing management in a scientifically-based, pragmatic, collaborative learning process. Lessons learned from networks have led to significant innovations in the Conservancy's approach to conservation, including strategy development and measures of success.
- **Served on Technical Scientific Advisory Team/Red-Cockaded Woodpecker Recovery Team, from 1997-99, appointed by Southeast Regional Director, USFWS.** We developed a scientifically-credible, but pragmatic, management plan for recovery of this controversial and widely distributed federally-listed forest species.
- **Provided key leadership role, including negotiating multi-party MOU and serving as first steering committee chair, in establishing the Gulf Coastal Plain Ecosystem Partnership in 1996.** This on-going private-state-federal conservation initiative encompasses 1 million contiguous acres in Florida and Alabama and has won awards for public/private collaboration, including cooperative fire management.
- **Co-led with Keystone Center a Department of Defense Biodiversity Initiative, a service-wide policy forum sponsored by the Secretary of Air Force and Pentagon in 1994-95.** Initiative resulted in improved integration between the military mission and conservation, major policy revisions, development of a handbook, now in its 3rd printing, that provides practical guidance on ecosystem management in the context of working military bases.
- **Established model conservation program in partnership with natural resources managers and military leaders at Eglin Air Force Base, Florida, in 1993.** Program has successfully integrated a vital military mission with conservation on a biologically important 463,000 acre military base over the past 10 years. Project included development of an award-winning adaptive management program that successfully

integrated inventory, monitoring, modeling and research with military missions, natural resource management and endangered species conservation. Project included restoration of world's largest remaining stands of longleaf pine, a once common, now critically endangered large-scale fire-adapted ecosystem.

EDUCATION

B.S. BIOLOGY, The Evergreen State College, Olympia, Washington, 1979.
M.S. WILDLIFE ECOLOGY AND CONSERVATION, School of Forest Resources and Conservation, University of Florida, Gainesville, 1991.

RECENT PUBLICATIONS

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PRESENTATIONS (since 1992)

Invited scientific conferences (10), scientific meetings (15), university lectures (18), other (12).